

Application No.: 10/643,944

REMARKS

Independent claims 1 and 5 stand rejected under 35 U.S.C. § 102 as being anticipated by Nakamura et al. '307 (Nakamura). This rejection is respectfully traversed for the following reasons.

Claims 1 and 5 embody the combination of an active layer comprising a well layer composed of InGa_N and an intermediate layer composed of Ga_N or InGa_N. In contrast, the alleged intermediate layer of Nakamura is formed of a nitride semiconductor having a band gap energy larger than that of an active layer, and specifically discloses AlGa_N (*see* col. 6, line 66 – col. 7, line 9). Indeed, Nakamura expressly teaches away from the alleged intermediate layer being composed of Ga_N or InGa_N (*see* col. 3, line 58 – col. 4, line 14).

Independent claims 6 and 13 stand rejected under 35 U.S.C. § 102 as being anticipated by JP '687. This rejection is respectfully traversed for the following reasons.

Claim 6 recites in pertinent part, “and a diffusion-blocking layer doped with an n-type impurity *and substantially not doped with a p-type impurity*” (emphasis added) and claim 13 recites in pertinent part “starting to add an n-type impurity *without adding a p-type impurity* in the course of the growth of the gallium nitride-based compound semiconductor layer, thereby forming a diffusion-blocking layer” (emphasis added). In contrast, the alleged diffusion-blocking layer 17 of JP '687 is expressly disclosed as being doped with both n and p-type impurities (*see* paragraph 0030; e.g., referring to Fig. 1(a) of JP '687, a semiconductor laser configured in such a manner that an intermediate layer comprising an undoped layer 16 composed of Ga_N and a diffusion-blocking layer 17 composed of AlGa_N is sandwiched between an active layer 15 that includes a well layer composed of InGa_N, and a p-type semiconductor layer 18; where the intermediate layer 17 is codoped with a p-type dopant and an n-type dopant).

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New claim 15 is submitted to also be patentable over the cited prior art. Claim 15 recites in pertinent part, "the thickness of the intermediate layer being not less than 60 nm and not more than 160 nm." Indeed, Nakamura teaches away from the recited thickness (*see, e.g.*, col. 7, lines 56-59, which teaches that as the proportion of the Al increases, the thickness of AlGa_N needs to be reduced so that the laser oscillation thereof becomes easier, and more specifically, the thickness of the first p-side nitride semiconductor layer is not greater than 50 nm).

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed, either expressly or inherently (noting that "inherency may not be established by probabilities or possibilities", *Scaltech Inc. v. Retec/Tetra*, 178 F.3d 1378 (Fed. Cir. 1999)), in a single prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the forgoing, it is submitted that the cited prior art does not anticipate the independent claims, nor any claim dependent thereon.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as the independent claims are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 102 be withdrawn.

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CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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